ACWI Report: Subcommittee on Sedimentation, 01/17/07

Chair: Jeff Bradley, ASCE. Presented by Jerry Bernard, Member, SOS (USDA-NRCS)

1. Report on the 2006 Joint Conference and planning for the next Joint Conference, 2010

The 8th Federal Interagency Sedimentation Conference (8thFISC)(SOS sponsored) was held jointly with the 3rd Federal Interagency Hydraulic Modeling Conference (3rdFIHMC)(SOH sponsored) in April, 2006. Over 600 people participated in the joint conference. It was decided to hold the two conferences as a single joint conference, instead of having separate conferences, because a large number of people normally participate in both conferences. The 8thFISC proceedings are on line at

http://pubs.usgs.gov/misc_reports/FISC_1947-2006/pdf/1st-7thFISCs-CD/MENU.pdf.

3rdFIHMC proceedings are in the process of being posted on line. A CD was produced by NRCS that includes all of the FISC proceedings from 1947 to 2006. The consensus of the attendees was to continue joint conferences in the future. Vendor spaces were also maxed out for the site for this joint conference.

The SOS has discussed with the SOH the possibility of holding their next conferences jointly, and it was agreed that the 9thFISC should be held jointly with the 4thFIHMC in 2010.

2. Bedload workshop to be held in April, 2007

The International Bedload Surrogate Monitoring Workshop is scheduled for April 11—14, 2007 at the St. Anthony Falls Laboratory, St. Paul, MN. The announcement for the workshop is located at

http://water.usgs.gov/osw/techniques/sediment/BRIC_workshop_2nd_announce_final_11_7_2006.doc

Background Information: A variety of difficulties are encountered in measuring and monitoring bedload discharge (transport), and particularly so in gravel and mixed gravel-sand bedded rivers. Direct bedload measurements, which normally require medium- and high-flow measurements to be useful, tend to be time-consuming, expensive, and potentially unsafe. Indirect or surrogate technologies developed largely over the last decade show considerable promise toward providing relatively dense, robust, and quantifiably reliable bedload data sets. It is, therefore, timely for scientists who have developed and (or) are using these surrogate methods to congregate in a workshop where new ideas, approaches and technologies will be presented and discussed.

Objectives: Workshop objectives are to (a) further the development and verification of novel bedload surrogate methodologies toward their acceptance in large-scale operational programs, and (b) and to consider needs related to international standardization of bedload data-collection,

storage, and dissemination protocols. These objectives may be attained as part of, or through deliberations following oral presentations, and as part of the workshop proceedings.

For those unable to attend the conference in person, the first three days of the workshop will be streaming over the worldwide web, making it available to anyone with internet access.

3. Turbidity Workgroup results.

The SOS Turbidity Workgroup has been working with ASTM Committee D-19 on Water to develop a new standard for measurement of turbidity above 1 Turbidity Unit. This Standard has gone through Main Committee ballot.

An edited scope of the new standard is:

1. Scope

1.1 This test method covers the static determination of turbidity in water. Static refers to a sample that is removed from its source and tested in an isolated instrument.

1.2 This test method is applicable to the measurement of turbidities greater than 1.0 turbidity unit (TU). The upper end of the measurement range was left undefined because different technologies described in this method can cover very different ranges.

1.3 Many of the turbidity units and instrument designs covered in this method are numerically equivalent in calibration when a common calibration standard is applied across those designs listed in this standard. Measurement of a common calibration standard of a defined value will also produce equivalent results across these technologies.

Major changes/findings associated with the new standard:

1. Turbidity— An expression of the optical properties of a sample that causes light rays to be scattered and absorbed rather than transmitted in straight lines through the sample. Turbidity of water is caused by the presence of suspended and dissolved matter such as clay, silt, finely divided organic matter, plankton, other microscopic organisms, organic acids, and dyes.

2. Dilutions of samples are not recommended, especially in the case of samples with rapidly settling particles (i.e., sediments). It is recommended that an appropriate instrument design, that covers the expected range, be selected to avoid the need to perform dilutions.

3. When reporting the measured result, a new set of appropriate units have been developed. The units are reflective of the technology used to generate the measurements. The intention is to provide traceability for the technology used to generate the measured result, and if necessary, provide more adequate comparison

to historical data. (Note: The USGS has already started using these units in report turbidity values recorded at its gaging stations.)

The new set of units is:
(Note: F in the unit indicated that the instrument uses a near inferred light source, other units use a white light source.)

Nephelometric non- ratio unit (NTU)
Surface Scatter unit (NTU)
Nephelometric Turbidity Ratio Unit (NTRU)
Nephelometric, near- IR turbidimeters, non-ratiometric unit (FNU)
Nephelometric near-IR turbidimeters, ratio metric unit (FNRU)
Formazin Back Scatter Unit (FBU)
Backscatter Unit (BU)
Formazin attenuation unit (FAU)
Light attenuation unit (AU)
Nephelometric Turbidity Multiyear Unit (NTMU)
Formazin Turbidity Multibeam Unit (FTMU)

It is ASTM's intent, after this standard is passed, to submit it to EPA for approval as a method for measurement of turbidity in ambient waters. For more information about this and other turbidity standards that ASTM is working on, please contact Doug Glysson, chair, ASTM Committee D-19 on Water, gglysson@usgs.gov.

4. Federal Interagency Sedimentation Project (FISP) Total Suspended Solids ASTM

Issue: Total Suspended Solids vs. suspended sediment concentration (TSS/SSC)

The Technical Committee that oversees the FISP has adopted the ASTM method for suspended sediment concentration (SSC) and has discouraged the use of total suspended solids (TSS) analysis for samples taken for open channel flow. The SOS is looking into the matter and may be bringing a recommendation to the ACWI at their next meeting.

Other Notes:

The FISP currently is concentrating its efforts on development of equipment and calibration of continuous monitoring technologies, whereas in the past they focused primarily on the physical sampling equipment (which is being used around the world). The FISP is overseen by the Technical Committee. The FISP is no longer attached to the SOS because of the inclusion of private sector direction into the SOS (fully FACA now, as are all ACWI subcommittees).